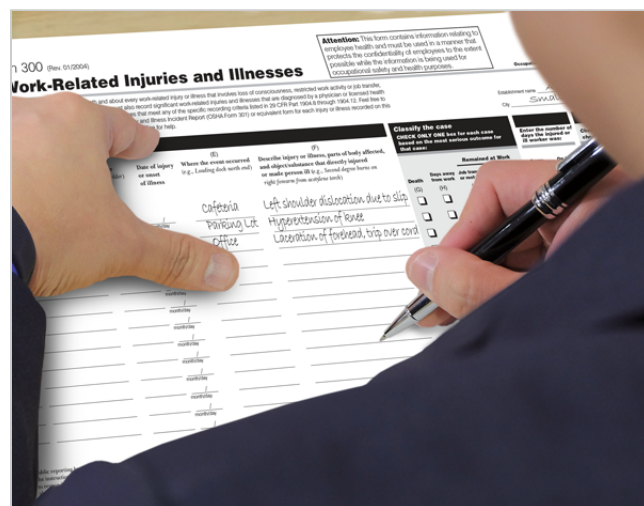


The Survey of Occupational Injuries and Illnesses Respondent Follow-Up Survey

Nonfatal workplace injury and illness data published by the U.S. Bureau of Labor Statistics (BLS) Survey of Occupational Injuries and Illnesses (SOII) provide a valuable measure of the safety and health of U.S. workers. Concerns have been raised about the completeness of the SOII data—in particular, that the number of injury and illness cases are underreported in the survey. In 2015, BLS conducted a survey of SOII respondents to determine if follow-up interviews or company records could be used to capture cases that were not initially reported by employers in the SOII. Results from the SOII Respondent Follow-Up Survey indicate that keeping of injury and illness logs is not widely prevalent and that small establishments are less likely than mid-sized and large establishments to keep records. The survey results also show that there is considerable misunderstanding of the recordkeeping requirements as well as some of the key concepts of the SOII.

The U.S. Bureau of Labor Statistics (BLS) collects and publishes information on nonfatal workplace injuries and illnesses from the national Survey of Occupational Injuries and Illnesses (SOII). From the information collected in the SOII, BLS publishes estimates of the total numbers and rates of work-related injuries and illnesses. The SOII also provides estimates for detailed industries for cases that require at least 1 day away from work as well as cases that require job transfer or work restriction. For those cases that require at least 1 day away from work, estimates are also published for case circumstances and worker demographics, measures that give a more comprehensive description of the kinds of occupational injuries and illnesses. The SOII is the only national source of these data, and millions of occupational injury and illness estimates are produced annually.^[1]

The SOII is conducted annually and includes approximately 230,000 establishments; it requires that the employers selected for the survey report all recordable workplace injuries and illnesses that occur among their employees. To maintain records of injuries and illnesses throughout the year, respondents are asked to record their information in Occupational Safety and Health Administration (OSHA) injury and illness logs.^[2] OSHA is responsible for



Elizabeth Rogers

rogers.elizabeth@bls.gov

Elizabeth Rogers is a supervisory economist in the Office of Compensation and Working Conditions, U.S. Bureau of Labor Statistics.

maintaining recordkeeping guidelines for what constitutes a workplace injury or illness to be reported in the SOII and for issuing interpretations of the rules and guidelines. Recordable cases are those resulting in one or more of the following: (1) loss of consciousness, (2) days away from work, (3) restricted work activity or job transfer, and (4) medical treatment beyond first aid.[3] Separately, OSHA requires employers in certain industries to maintain records at their establishment and to report those records to OSHA. There is an overlap between these two groups of establishments. The recordkeeping requirements for OSHA (and therefore the SOII) are not the same as the criteria for determining if an injury or illness is covered by workers' compensation. In addition, workers' compensation criteria vary across states, while OSHA rules are consistent across states, allowing for the production of consistent national estimates.

Research indicates that the number of injuries and illnesses is likely underreported in the SOII.[4] Preliminary BLS and BLS-funded research focused on matching cases reported to the SOII (including the detailed information available for cases with at least 1 day away from work) with other available data sources, such as workers' compensation claims.[5] This research indicates that cases were underreported in the SOII, but variations in datasets and methodology in the studies result in different estimates of underreporting.[6] Additional research focused on interviewing employers to determine their injury and illness recordkeeping practices. Some of these studies included conducting qualitative interviews with a limited number of employers.[7] These qualitative interviews pointed to potential issues with employer understanding of OSHA recordkeeping guidelines and SOII survey instructions.

To produce statistically valid estimates of employers' understanding of recordkeeping and their responding to the SOII, BLS partnered with four states (Minnesota, New York, Oregon, and Washington) to conduct four state-based surveys.[8] In addition to the separate state reports from this effort, a report combining results from all states was produced.[9] Previous SOII respondents were sampled, contacted by telephone, and asked about OSHA recordkeeping practices, injury and illness tracking, SOII reporting practices, and their understanding of OSHA recordkeeping guidelines. The study found that a large number of establishments were unfamiliar with OSHA recordkeeping or recording guidelines and had often not had multiple years of experience reporting to the SOII. Across the four states, only 19 percent of establishments reported that the person directly responsible for responding to the SOII had participated for multiple years.

National SOII Respondent Follow-Up Survey

As data collection for the four-state study was concluding, BLS contracted with the professional services firm Westat to conduct a nationally representative survey of SOII respondents. The SOII Respondent Follow-Up Survey (henceforth referred to as the Respondent Survey) was undertaken to provide understanding about employers' recordkeeping practices and knowledge of OSHA guidelines for the entire United States, especially given variations in state workers' compensation laws.

Goals and methodology

The national Respondent Survey was designed to further examine employer recordkeeping and reporting practices, particularly those related to the potential reporting of late cases. A sample of 3,703 private sector establishments was drawn from a universe of respondents who had been sampled to participate in the 2013 SOII and who had then provided a response.[10]

All estimates presented in this article were weighted, and the sample weights were developed to account for this two-phase survey design. State and local government establishments were excluded from the national Respondent Survey. Establishments in the railroad and mining sectors, for which injury and illness data are maintained by the Federal Railroad Administration and the Mine Safety and Health Administration, respectively, were also excluded from the Respondent Survey.^[11] The sample was stratified by state, size class, and industry sector. Size class was defined as small-, medium-, and large-sized establishments, which is a collapsed version of the five-category size-class structure of the SOII. Industry was defined by using 15 North American Industry Classification System (NAICS) sectors, with some sectors combined. (See table 1.)

Table 1. Percentage of sample by industry sector

Industry	NAICS code	Percentage of sample
Agriculture, forestry, fishing, and hunting	11	1.0
Mining, quarrying, and oil and gas extraction	21	0.5
Utilities	22	0.7
Construction	23	6.5
Manufacturing	31–33	13.9
Wholesale trade	42	5.3
Retail trade	44–45	16.7
Transportation and warehousing	48–49	4.2
Information	51	1.9
Finance and insurance, real estate and rental and leasing	52–53	4.5
Professional, scientific, and technical services; management of companies and enterprises; administrative and support and waste management and remediation services	54–56	11.8
Educational services	61	1.7
Health care and social assistance	62	15.2
Arts, entertainment, and recreation; accommodation and food services	71–72	12.6
Other services	81	3.6

Note: NAICS = North American Industry Classification System.
Source: U.S. Bureau of Labor Statistics.

A questionnaire was developed to examine key concepts, including the following:

- Could BLS use records or follow-up interviews to capture cases that may have been left off initial SOII reporting?
- How common are recordkeeping errors, especially those that may lead to SOII underreporting?
- What kinds of SOII reporters are associated with late cases and measurement errors?
- Are SOII respondents able and willing to send in updated OSHA logs?

The survey was conducted by Computer Assisted Telephone Interviewing (CATI). Respondents were notified of the request to participate in the Respondent Survey by email or letter. Interviews were obtained from 1,852 locations, with a response rate of 52.7 percent and 777 OSHA logs collected.

Nonresponse bias analysis, adjustment, and estimation

After data collection was completed, the sample weights were adjusted for survey nonresponse by using the same categories of sampling criteria. Point estimates for each of the interview questions were produced. This article presents these estimates as proportions of responses, in some cases cross-tabulated by size class or industry sector. Variances for each estimate were also produced and are available from BLS upon request. All statements were tested for statistical validity.

Results of the SOII Respondent Follow-Up Survey

Each establishment sampled to report data to the SOII is required to keep OSHA logs for the duration of the reference year in which it has been sampled. At the beginning of the reference year, every establishment is notified that it is required to complete the SOII and to provide a copy of the OSHA logs. All SOII notifications to keep records for the 2013 reference year were delivered to respondents by the United States Postal Service. The OSHA logs are to be used by the respondents to record specific cases through the year, and they are totaled at the end of the reference year and entered into a summary form. For the SOII, respondents are also asked to record detailed case-specific information on the OSHA-provided case form for cases that required at least 1 day away from work (or for a sample of the cases if there are more than 15 cases). The respondents are asked to maintain OSHA logs throughout the year and not to rely on other sources or memory, with the intention of increasing the accuracy of information reported to the SOII. Despite this requirement, about one-half (43 percent) of the establishments maintained OSHA logs, which was not statistically different from the percentage that reported that they did not keep logs (44 percent).

In addition to the requirement to keep these records when sampled by the SOII, some establishments are also required by OSHA to keep these records on an annual basis. OSHA exempts establishments in some industries from the requirement to keep injury and illness records.^[12] All establishments with 11 or more employees in the following sectors must keep OSHA records: agriculture, forestry, fishing and hunting; oil and gas extraction; utilities; construction; manufacturing; and wholesale trade. No establishments in the educational services sector are required to keep OSHA records unless sampled by the SOII. All other sectors include a mix of partially exempt and nonexempt industries.

The percentage of establishments that indicated that they kept OSHA logs ranged from 92 percent in agriculture, forestry, fishing, and hunting to 17 percent in educational services. The percentage of establishments that reported that they kept OSHA logs was higher than the percentage that did not keep logs in the following industry sectors: agriculture, forestry, fishing, and hunting (92 percent); utilities (83 percent); construction (70 percent); manufacturing (74 percent); retail trade (60 percent); and transportation and warehousing (73 percent). Most establishments in these sectors are required by OSHA to keep logs if they employ more than 10 employees.^[13] By contrast, the percentage of establishments that indicated that they did not keep OSHA logs was higher than the percentage that did keep logs in finance and insurance, real estate and rental and leasing (73 percent); educational services (70 percent); and arts, entertainment and recreation, accommodation and food services (62 percent), even though some industries within these sectors are required by OSHA to do so. Small establishments reported the lowest percentage of keeping OSHA logs (41 percent), compared with midsize (71 percent) and large establishments (85 percent). (See table 2.)

Table 2. Percentage of establishments indicating that OSHA logs are maintained

Industry	Yes	No	Do not know	Refused to respond
Private industry	43	44	13	0
Agriculture, forestry, fishing, and hunting	92	8	0	0
Mining, quarrying, and oil and gas extraction	21	75	3	0
Utilities	83	2	15	0
Construction	70	28	2	0
Manufacturing	74	18	8	0
Wholesale trade	42	57	1	0
Retail trade	60	30	11	0
Transportation and warehousing	73	26	1	0
Information	46	53	1	0
Finance and insurance, real estate and rental and leasing	19	73	8	0
Professional, scientific, and technical services; management of companies and enterprises; administrative and support and waste management and remediation services	32	53	16	0
Educational services	17	70	12	0
Health care and social assistance	49	32	19	0
Arts, entertainment, and recreation; accommodation and food services	24	62	14	0
Other services	20	32	47	0

Note: OSHA = Occupational Safety and Health Administration, an agency of the U.S. Department of Labor.

Source: U.S. Bureau of Labor Statistics.

Who keeps track of OSHA recordkeeping?

The majority (87 percent) of establishments indicated that the person directly responsible for answering the Respondent Survey was also responsible for completing (or assisting with completing) the OSHA recordkeeping or other injury and illness tracking. Of those who responded that multiple people were responsible for these tasks, a majority (71 percent) of establishments said that the person directly responsible for answering the Respondent Survey was also the person primarily responsible for OSHA recordkeeping and injury and illness tracking.

OSHA recordkeeping training

Training in OSHA recordkeeping requirements is designed to increase recordkeepers' knowledge of the kinds of injuries and illnesses that should be recorded and what information recordkeepers are required to include about those cases. This training intends to increase the quality of the information that employers record in OSHA logs. For respondents who indicated that OSHA logs were kept at their establishment or firm, the Respondent Survey asked if the person primarily responsible for OSHA recordkeeping had ever received formal training such as classes, seminars, or online courses. Around one-half (48 percent) of the establishments reported that the person primarily responsible for OSHA recordkeeping had received formal recordkeeping training. About the same percentage of establishments (46 percent) responded that their employees had not received formal training.

A majority of establishments in the utilities (92 percent) and information (87 percent) sectors reported that their primary recordkeeper had received formal training. Construction was the only sector in which a majority of establishments (83 percent) indicated that the primary recordkeeper had never received formal training. Of the establishments who indicated that their employees had received formal OSHA recordkeeping training, a higher percentage (66 percent) said that the training had last occurred between 1 and 5 years than any other period prior

to the Respondent Survey. Only 12 percent reported that the recordkeeping training had occurred in the previous year. (See table 3.)

Table 3. Percentage of respondents keeping OSHA logs who had received formal OSHA recordkeeping training

Industry	Yes	No	Do not know	Refused to respond
Private industry	48	46	6	0
Agriculture, forestry, fishing, and hunting	72	28	0	0
Mining, quarrying, and oil and gas extraction	45	55	0	0
Utilities	92	8	0	0
Construction	17	83	0	0
Manufacturing	63	31	6	0
Wholesale trade	24	73	3	0
Retail trade	66	17	18	0
Transportation and warehousing	47	51	1	0
Information	87	7	6	0
Finance and insurance, real estate and rental and leasing	62	37	2	0
Professional, scientific, and technical services; management of companies and enterprises; administrative and support and waste management and remediation services	41	56	3	0
Educational services	42	58	0	0
Health care and social assistance	68	31	1	0
Arts, entertainment, and recreation; accommodation and food services	47	44	8	1
Other services	9	62	29	0

Note: OSHA = Occupational Safety and Health Administration, an agency of the U.S. Department of Labor.

Source: U.S. Bureau of Labor Statistics.

SOII reporting

Fifty-one percent of establishments indicated that the person directly responsible for completing the SOII in 2013 was a first-time respondent to the SOII in that year, while an additional 29 percent did not know if that person had completed the SOII before 2013. Twenty percent of establishments indicated that that person was not a first-time responder to the SOII. Although the questions asked were not the same, this 20-percent figure is similar to the percentage of establishments in the four-state study that responded that the person directly responsible for completing the SOII had completed it multiple times (19 percent across the four states). Previous experience in completing the SOII is likely to increase knowledge of the survey and therefore the accuracy of the information reported.

The Respondent Survey asked establishments to provide information on the sources that they used to complete the SOII at the conclusion of the 2013 reference year and to indicate all of the sources they had used to do so. Despite being provided the OSHA logs at the time they were notified of their mandatory responsibility to report to the SOII, 37 percent of establishments used OSHA Form 300A (“Summary of Work-Related Injuries and Illnesses”), and 25 percent of establishments used the OSHA Form 301 detailed case form (“Injury and Illness Incident Report”). Many establishments used sources that are not consistent with OSHA recordkeeping or SOII concepts. Sixty-three percent used company-specific injury and illness records, such as injury report forms or individual files kept on employees, and 43 percent of respondents used workers’ compensation records such as

claims or first state reports.^[14] These results suggest that individual company definitions of injuries and illnesses or workers' compensation criteria may form some of the basis of reporting occupational injuries and illnesses to the SOII rather than OSHA recordkeeping guidelines.

Workers' compensation completion

Most establishments (81 percent) reported that the person directly responsible for answering the Respondent Survey was also involved in the completion of workers' compensation claims. As the guidelines for workers' compensation differ from OSHA recordkeeping rules and vary by state, establishments with employees responsible for reporting to the SOII and also for completing workers' compensation claims may be more likely to have difficulty in correctly applying OSHA recordkeeping rules when reporting to the SOII.

General recordkeeping practices

Establishments were asked a series of questions about general recordkeeping practices, separate from the practices at their establishment or firm for completing the 2013 SOII. If an establishment indicated that OSHA logs were maintained, it was asked about recordkeeping practices related to the OSHA log; if not, the question was altered to refer more generally to the "BLS survey," meaning the SOII. For the purposes of determining the respondents' understanding of general recordkeeping practices, responses from these two groups are considered together. OSHA requires that injuries and illnesses be recorded on the log within 7 days of occurrence. Most establishments (68 percent) stated that cases were recorded within 1 week. A majority of establishments in the following sectors reported recording injuries and illnesses within a week: mining, quarrying, and oil and gas extraction (98 percent); construction (86 percent); manufacturing (76 percent); wholesale trade (89 percent) and educational services (83 percent).

Establishments also reported practices that were not compliant with OSHA recordkeeping guidelines and showed confusion among their recordkeeping employees about how to correctly identify information to be included on the OSHA log and to the SOII. Approximately a quarter of establishments (28 percent) accurately identified calendar days as the basis for determining the number of days away from work. Fifty-five percent incorrectly identified shift days as the days-away-from-work measure. Respondents in small establishments were less likely (25 percent) to correctly identify calendar days than were respondents in midsize and large establishments (60 and 71 percent, respectively).

According to OSHA recordkeeping guidelines, injuries and illnesses to temporary workers should be recorded at the establishment where the employees are supervised. However, for establishments in companies in which temporary workers are employed from staffing agencies, 37 percent include injuries or illnesses to these workers on the SOII. Of the establishments that maintained OSHA logs, 41 percent did not add or update cases on the previous year's OSHA log, an additional 14 percent never needed to add or update cases in the log, and 35 percent did add or update cases to the previous year's log.

Recordkeeping vignettes

In a further attempt to gauge respondents' recordkeeping knowledge about key OSHA rules, recordkeeping vignettes were asked of each respondent. Because each vignette has a correct answer, it is possible to assess the sophistication of respondents' understanding of OSHA recordkeeping. The establishments that indicated that they maintained logs were asked specifically about OSHA recordkeeping, while establishments that did not keep logs

were asked if they would include the injury in the SOII. The responses to the questions indicate that there is considerable confusion about key OSHA recordkeeping concepts.

Vignette 1

“Let’s say an employee sprained their ankle at work on Friday. The doctor recommended they take 2 days off from work. They were not scheduled to work on the weekend, and returned to work on Monday.”

Three questions were asked related to the vignette:

1. Would your company consider this an OSHA recordable injury [or] include this injury on the BLS survey?
2. (If yes) would you record any days away from work?
3. (If yes) how many?

The correct responses to the three questions are (1) this is a recordable case that should be included on the OSHA log/SOII, (2) days away from work should be recorded, and (3) the number of days away from work recorded should be “2.” Approximately one-half (56 percent) of establishments correctly responded “yes” to the first question, 28 percent answered the question incorrectly, and an additional 16 percent reported that they did not know the answer. Of those who correctly responded “yes” to the first question, about half (54 percent) then incorrectly answered that this is not a days-away-from-work case. Of those who responded correctly to the first two questions related to the vignette, a majority (78 percent) correctly reported that the number of days away from work should be recorded as “2.”

Vignette 2

“Let’s say a worker broke their arm at work, saw their family doctor and did not file a workers’ compensation claim, instead using their personal medical insurance. Would your company consider this an OSHA recordable injury / include this on the BLS survey?”

The correct response is that this is a recordable case that should be recorded and included in the SOII. About three-fifths (61 percent) of the establishments correctly identified this as a recordable case.

Vignette 3

“Let’s say a worker was injured, and the doctor recommended 2 days away from work and 10 days of modified or restricted job duties. Would your company classify this as a ‘days away from work’ case or a ‘days of job transfer and restriction’ case on the OSHA 300 Log / BLS survey?”

The correct answer is that this should be identified as a days-away-from-work case. Twenty-nine percent of establishments correctly identified it as a days-away-from-work case, 31 percent identified it as a days-of-job-transfer-or-restriction case, 17 percent considered it an “other” kind of case, and 22 percent said that they did not know.

Timing issues that may prevent inclusion of an injury or illness case in the SOII

Another goal of the Respondent Survey was to determine if there are cases that occur that do not get recorded on the OSHA log or reported to the SOII because of timing issues (such as the case being reported in November or December, the case worsening after it was initially reported, or the case being reported or worsening after the

submission of the SOII), pending workers' compensation status, or employment considerations (such as the injured employee no longer working at the company). Establishments were asked if they could recall any of these scenarios happening at their company. Most establishments (87 percent) reported that they did not recall any of these kinds of situations ever occurring at their company.

When asked about each of the specific situations, a majority of establishments responded that none of them had ever happened and none had happened in 2013. Despite a majority of establishments saying that they did not recall situations happening that were likely to cause missing cases or that their company did not update the OSHA log, most (72 percent) establishments indicated that they could produce an OSHA log with updates if asked to do so.

Summary and conclusions

The goals of the Respondent Survey included determining whether there were recordkeeping issues found among establishments (especially those that would lead to SOII underreporting), whether the SOII could capture late cases by following up with establishments, and whether establishments could supply BLS with OSHA logs after the submission of SOII. The results show that a number of notable recordkeeping issues were found, especially related to the percentage of establishments that keep OSHA logs. The results also show a fairly low level of recordkeeping training, the use of sources other than the OSHA forms in responding to the SOII, and considerable confusion related to general recordkeeping knowledge.

The results of the Respondent Survey also suggest that establishments commonly do not keep OSHA logs, with about the same percentage of establishments reporting that they do and do not maintain logs. Smaller establishments are less likely to keep OSHA logs than midsize or large establishments. Of the 15 industry sectors, 6 reported more establishments maintaining OSHA logs than did not. The other sectors either reported a higher percentage of establishments that did not maintain logs or no difference in the percentage of establishments keeping or not keeping OSHA records. Even in sectors in which some establishments are required to keep OSHA logs on a regular annual basis, results show that not all establishments replied that OSHA logs were kept. Also, only around a third of establishments indicated using OSHA Form 300A and a quarter of establishments indicated using OSHA Form 301 to complete the survey.

About half of establishments reported that the person responsible for keeping the OSHA log (if it was maintained) had some kind of formal recordkeeping training, with most reporting that the training had occurred within the previous 5 years. The survey questions that were designed to indicate understanding of recordkeeping requirements showed that there was considerable misunderstanding of the survey concepts. Reported answers related to occupational injury and illness scenarios suggest that there is some confusion over the use of calendar days to determine the duration of an injury or illness, which is likely to contribute to the underreporting of both the total number of cases with days away from work and the total number of days away from work required for cases that are correctly identified. Also, similar levels of confusion over the requirement to record the injuries and illnesses of temporary workers should be examined further to determine if this confusion increases the underreporting of injuries and illnesses among these workers.

Most establishments indicated that although late cases had never happened at their company before, they could supply an updated OSHA log if they were asked to do so. Further research is required to determine if improvements can be made in communication or training of SOII respondents about required recordkeeping.

Improvements to SOII collection procedures should also be examined, with a focus on mitigating any effects that these procedures might have on the quality of SOII estimates. Possible changes to SOII collection methods could include redesigning survey materials, increasing the use of email notifications (to include first-time respondents to the survey), and providing notifications throughout the reference year.

To improve the recordkeeping knowledge of SOII respondents, BLS could provide access to available online OSHA recordkeeping training modules and other SOII-related training resources. BLS could also work with OSHA to help develop new training options for establishments required to keep OSHA logs, whether as respondents to the SOII or as required by OSHA. Finally, BLS could share with OSHA its knowledge of situations in which employers may be confused by or unaware of recordkeeping guidelines, which could help guide the training toward areas that are most in need of improvement.

SUGGESTED CITATION

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NOTES

¹ For the latest data on work-related illnesses and injuries, see *Employer-Reported Workplace Injury and Illness, 2018*, USDL-19-1909 (U.S. Bureau of Labor Statistics, November 7, 2019), <https://www.bls.gov/news.release/osh.nr0.htm>. For more detailed information, see "Survey of Occupational Injuries and Illnesses data," *Injuries, Illnesses, and Fatalities* (U.S. Bureau of Labor Statistics, April 29, 2020), <https://www.bls.gov/iif/soii-data.htm#newsrelease>.

² For a complete set of the OSHA recordkeeping forms, see "Injury & illness recordkeeping forms—300, 300A, 301" (Occupational Safety and Health Administration, U.S. Department of Labor), <http://www.osha.gov/recordkeeping/RKforms.html>; and "OSHA injury and illness recordkeeping and reporting requirements" (Occupational Safety and Health Administration, U.S. Department of Labor), <https://www.osha.gov/recordkeeping/>.

³ For more information on the kinds of injuries and illnesses that must be reported, see "OSHA Injury and Illness Recordkeeping and Reporting Requirements" (Occupational Safety and Health Administration, U.S. Department of Labor), <https://www.osha.gov/recordkeeping/>.

⁴ See "Survey of Occupational Injuries and Illnesses data quality research," selected articles and research, *Injuries, Illnesses, and Fatalities* (U.S. Bureau of Labor Statistics, June 28, 2019), <https://www.bls.gov/iif/data-quality.htm>.

⁵ See "Data quality research," *Injuries, Illnesses, and Fatalities* (U.S. Bureau of Labor Statistics, April 5, 2019), <https://www.bls.gov/iif/soii-bibliography.htm#matching>.

⁶ See John W. Ruser, "Allegations of undercounting in the BLS Survey of Occupational Injuries and Illnesses" (U.S. Bureau of Labor Statistics, Office of Survey Methods Research, October 2010), <https://www.bls.gov/osmr/research-papers/2010/st100170.htm>; Sara Wuellner, Dave Bonauto, and Darrin Adams, "SOII undercount research: Washington SOII-WC record linkage, 2000–2011," final report (Washington State Department of Labor and Industries, August 30, 2014), https://www.bls.gov/iif/wa_workercomp.pdf; and Nicole Nestoriak and Brooks Pierce, "Comparing injury data from administrative and survey sources: methodological issues" (U.S. Bureau of Labor Statistics, Office of Survey Methods Research, October 2012), <https://www.bls.gov/osmr/research-papers/2012/pdf/st120130.pdf>.

⁷ See Polly Phipps and Danna Moore, "Employer interviews: exploring differences in reporting work injuries and illnesses in the Survey of Occupational Injuries and Illnesses and state workers' compensation claims" (U.S. Bureau of Labor Statistics, Office of Survey Methods Research, 2010), <https://www.bls.gov/osmr/research-papers/2010/pdf/st100210.pdf>; and Sara Wuellner and Dave Bonauto, "Exploring the relationship between employer recordkeeping and underreporting in the BLS Survey of Occupational Injuries

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⁸ See the following reports for Minnesota, New York, Oregon, and Washington, respectively: William Boyer and Brian Zaidman, “SOII undercount project: Minnesota interviews with SOII respondents” (Minnesota Department of Labor and Industry, September 2014), https://www.bls.gov/iif/mn_interviews.pdf; Karen Cummings, “SOII undercount research: Employee interview project New York State” (New York State Department of Health, Bureau of Occupational Health and Injury Prevention, September 2014), https://www.bls.gov/iif/ny_interviews.pdf; Nathan Johnson, Karen Howard, and Ronni Rachele, “Bureau of Labor Statistics SOII undercount research: Oregon employer survey,” final report (Oregon Department of Consumer and Business Services, September 2014), https://www.bls.gov/iif/or_interviews.pdf; and Sara Wuellner, Dave Bonauto, Christine Rappin, and Wendy Lu, “SOII undercount research: telephone interviews with SOII respondents, Washington,” final report (Washington State Department of Labor and Industries, Safety and Health Assessment and Research for Prevention Program, September 2014), https://www.bls.gov/iif/wa_interviews.pdf.

⁹ See Sara Wuellner and Polly Phipps, “Employer-based work injury recordkeeping: data from four states,” ASA/NSF/BLS fellowship final report (Washington State Department of Labor and Industries Safety and Health Assessment and Research for Prevention Program, March, 2017), <https://www.bls.gov/iif/four-state-data-report.pdf>.

¹⁰ For details of the Westat study, see James Greenless, Hanna Popick, Margaret Pacious, and Meghan Martin, *BLS Task Order 19: SOII Respondent Follow-Up Survey Final Report* (Rockville, MD: Westat, February 29, 2016), <https://www.bls.gov/iif/westat-soii-national-recontact-survey-final-report.pdf>.

¹¹ For more information, see the Federal Railroad Administration web page (U.S. Department of Transportation), <https://railroads.dot.gov/>; and the Mine Safety and Health Administration web page (U.S. Department of Labor), <https://www.msha.gov/>. For more information on the different federal agencies responsible for collecting these data, see Harvey J. Hilaski, “Understanding statistics on occupational illnesses,” *Monthly Labor Review*, March 1981, pp. 25–29, <https://www.bls.gov/opub/mlr/1981/03/art3full.pdf>.

¹² For a list of the partially exempt industries, see “Non-mandatory appendix A to subpart B—partially exempt industries” (Occupational Safety and Health Administration, U.S. Department of Labor, September 2014), <https://www.osha.gov/laws-regs/regulations/standardnumber/1904/1904SubpartBAppA>.

¹³ Some establishments in the retail trade and transportation and warehousing sectors are exempt regardless of size.

¹⁴ Respondents could select multiple responses to this question; percentages do not total to 100.

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